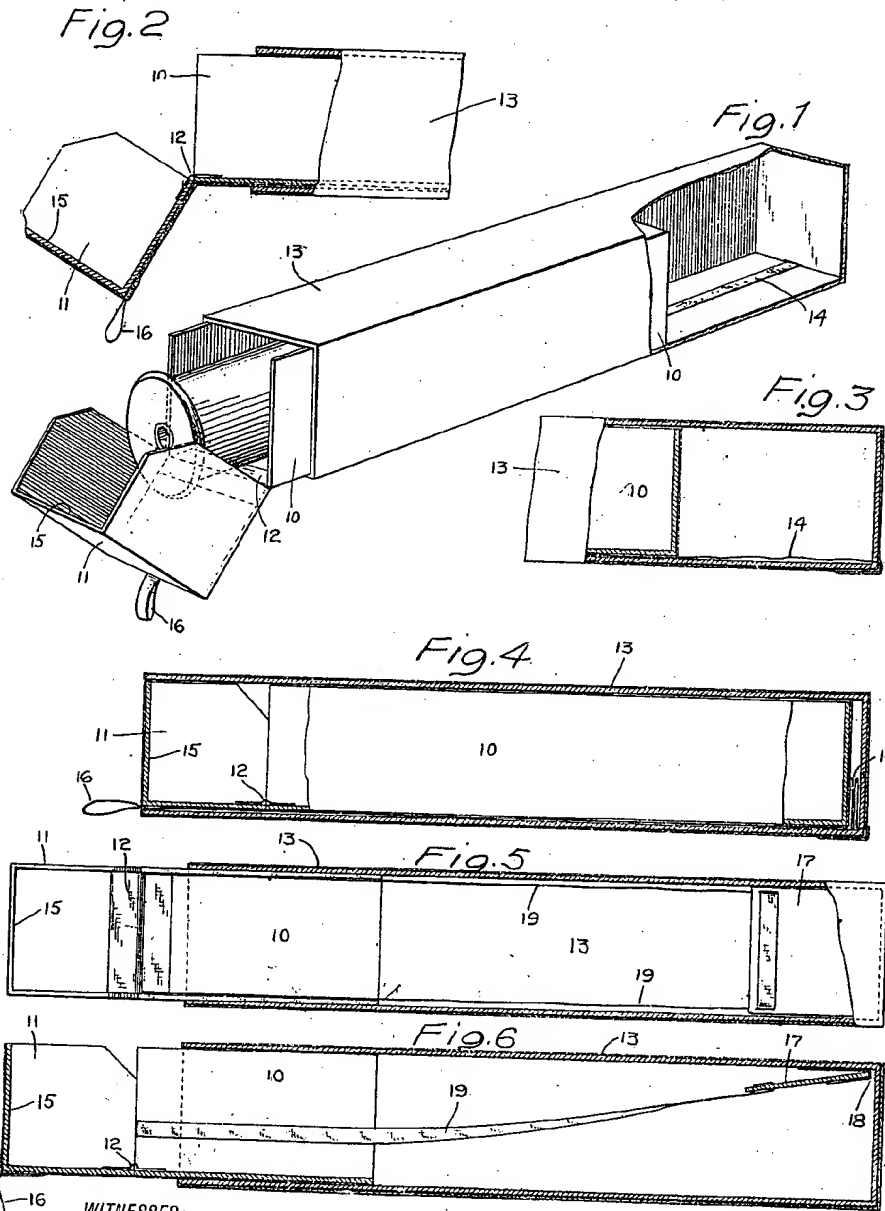


M. S. SELLMAN.
 DROP END BOX.
 APPLICATION FILED AUG. 13, 1912.

1,080,933.

Patented Dec. 9, 1913.



WITNESSES:
H. W. Meade
S. W. Atkinson.

INVENTOR
Minnie Shelton Sellman
 BY
A. M. Foster
 ATTORNEY

UNITED STATES PATENT OFFICE.

MINNIE SHELTON SELLMAN, OF BRIDGEPORT, CONNECTICUT.

DROP-END BOX.

1,080,933.

Specification of Letters Patent.

Patented Dec. 9, 1913.

Application filed August 13, 1912. Serial No. 714,826.

To all whom it may concern:

Be it known that I, MINNIE SHELTON SELLMAN, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Drop-End Boxes, of which the following is a specification.

This invention has for its object to provide a simple and inexpensive drop end box, the principle of which is adapted to music roll boxes, shoe boxes, corset boxes and to boxes for numerous other articles of merchandise that are kept in boxes either before or after sale by the dealer.

As an important application of the principle of the invention I will illustrate and describe it as a music roll box.

It is well understood that in music stores where large quantities of music rolls are on sale it is necessary to pile the boxes up, frequently many rows deep, and that when any roll in the pile is wanted, except a top one, it is exceedingly inconvenient to get the box out from the pile, it being necessary to entirely withdraw boxes of the style now in general use from the pile before the roll can be removed therefrom. The same difficulty occurs in homes where many rolls are frequently piled together and very often numerous rolls must be taken down and the pile torn to pieces in order to get some special roll that may be desired and which ordinarily is not at the top of the pile. In order to overcome these objections and provide a box that will permit the roll to be removed and replaced without withdrawing the box or disturbing the pile and which will also provide convenient means for withdrawing the box from the pile should the roll or other contents be sold, I have devised the novel drop end box of which the following description in connection with the accompanying drawing is a specification, reference characters being used to indicate the several parts.

Figure 1 is a perspective view of my novel box in the open position to permit the removal or replacement of a roll, the rear end of the case being broken away; Fig. 2 an elevation partly in section of the outer end of the box and case in the open position; Fig. 3 a similar view of the inner end of the box and case; Fig. 4 a longitudinal section of the case and partial section of the box in the closed position, and Fig. 5 is a horizontal section and Fig. 6 a vertical section

of a variant form of my novel drop end box in the open position.

10 denotes the box which is provided at its outer end with a drop end 11, the bottom of which is hinged, as at 12, to the bottom of the box. The drop end in the case of a music roll box may be two inches more or less in length and its side walls, end wall and bottom correspond with the box.

13 denotes the case which just receives the box and the drop end and is open at one end only.

14 denotes a tape, one end of which is attached to and extends inside the inner end of the case, the other end being attached to and extending outside the inner end of the box, the objects being to limit the outward movement of the box relatively to the case after it has been drawn out of the case far enough to permit the drop end to swing downward and also to enable the operator by continuing to pull upon the drop end after the tape has been extended, as in Fig. 1, to start the case also outward so that the user may take hold of it conveniently and draw it out of the pile should the roll or other article belonging in the box be sold. The drop end is made long enough so that when the box is drawn out and the drop end allowed to swing downward, the end of the roll will project from the box, so that it may be easily grasped by the fingers of the user, as clearly indicated in Fig. 1. The label designating the music of the roll is affixed to the end wall of the drop end, which is specifically indicated by 15, so that it may be conveniently inspected at all times. The drop end is provided with a loop 16 which always remains outside the case in position to be grasped by the fingers of the user when it is required to draw out the drop end and remove the roll from the box or when it is required to draw out both box and case either before or after the roll is removed.

The form illustrated in Figs. 5 and 6 differs in that the box has no inner end and need not necessarily extend but a short distance into the case. The function that the inner end of the box performs in the other form is performed in this form by means of a flap 17 hinged to the top of the case at its inner end, as at 18, from which tapes 19 extend to the box so that when the drop end and box are drawn outward, as in Figs. 5 and 6, the flap will be drawn forward also

and will bear against the inner end of the roll and force it outward far enough so that it may be easily grasped by the user. In other respects the operation is precisely the same as the operation of the other form.

Having thus described my invention I claim:

1. A drop-end box comprising a case open at one end, a box slidably mounted in said case, a drop-end independent of said case and having a hinged connection with the forward end of said slidable box, said end having a portion slidably engaging said case, said drop end being provided with means whereby the box and drop end may be withdrawn from the case, and a flexible pulling connection between the box and the rear end of the case and located wholly within the latter, whereby the case may be drawn

along with the box after the latter has been partially withdrawn from said case.

2. A drop end box comprising a case open at one end, a box slidably mounted in said case, a drop end pivotally connected with said box and provided with means whereby the box may be withdrawn from the case, an internal flap hinged to the case, and a flexible pulling connection between the box and said flap and located wholly within the case, whereby the case may be drawn along with the box after the latter has been partially withdrawn from said case.

In testimony whereof I affix my signature in presence of two witnesses.

MINNIE SHELTON SELLMAN.

Witnesses:

C. H. SHEEHAN,
A. M. WOOSTER.

Sept. 10, 1968

C. J. PIERCE, JR.
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

Filed Oct. 10, 1966

10 Sheets-Sheet 1

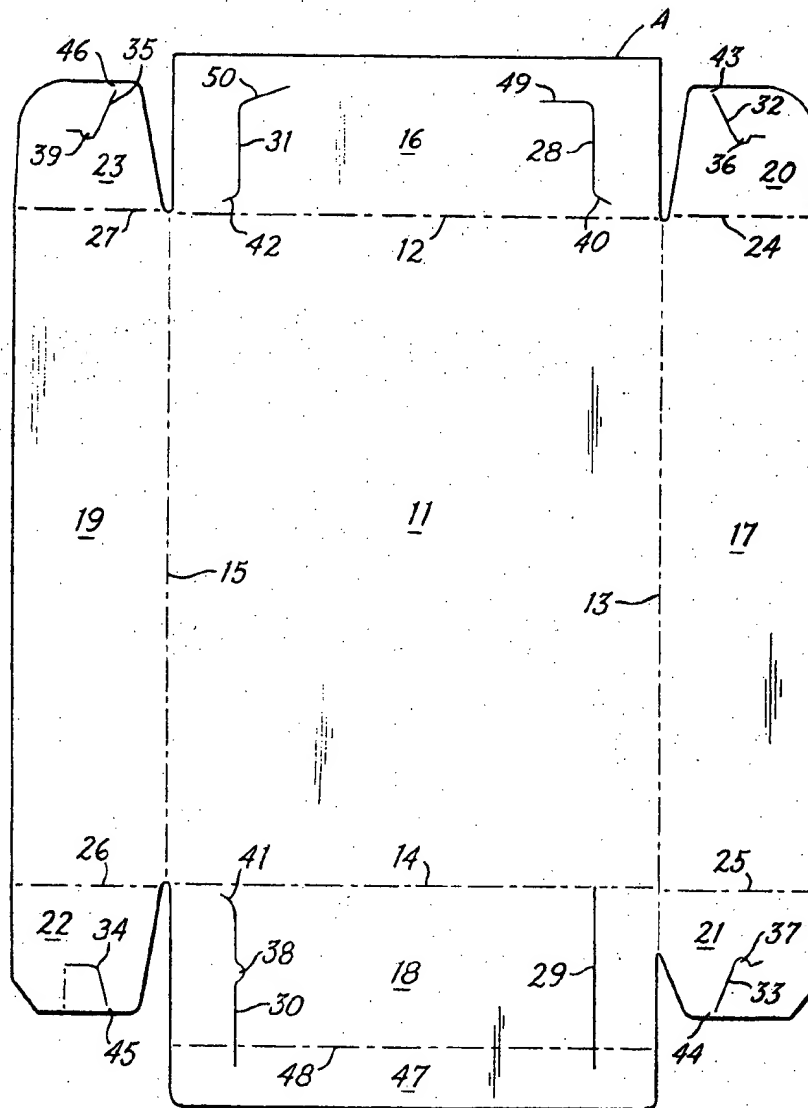


Fig. 1

INVENTOR,
Chester J. Pierce, Jr.

BY
Howard Russell
ATTORNEY

Sept. 10, 1968

C. J. PIERCE, JR.
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

Filed Oct. 10, 1966

10 Sheets-Sheet 2

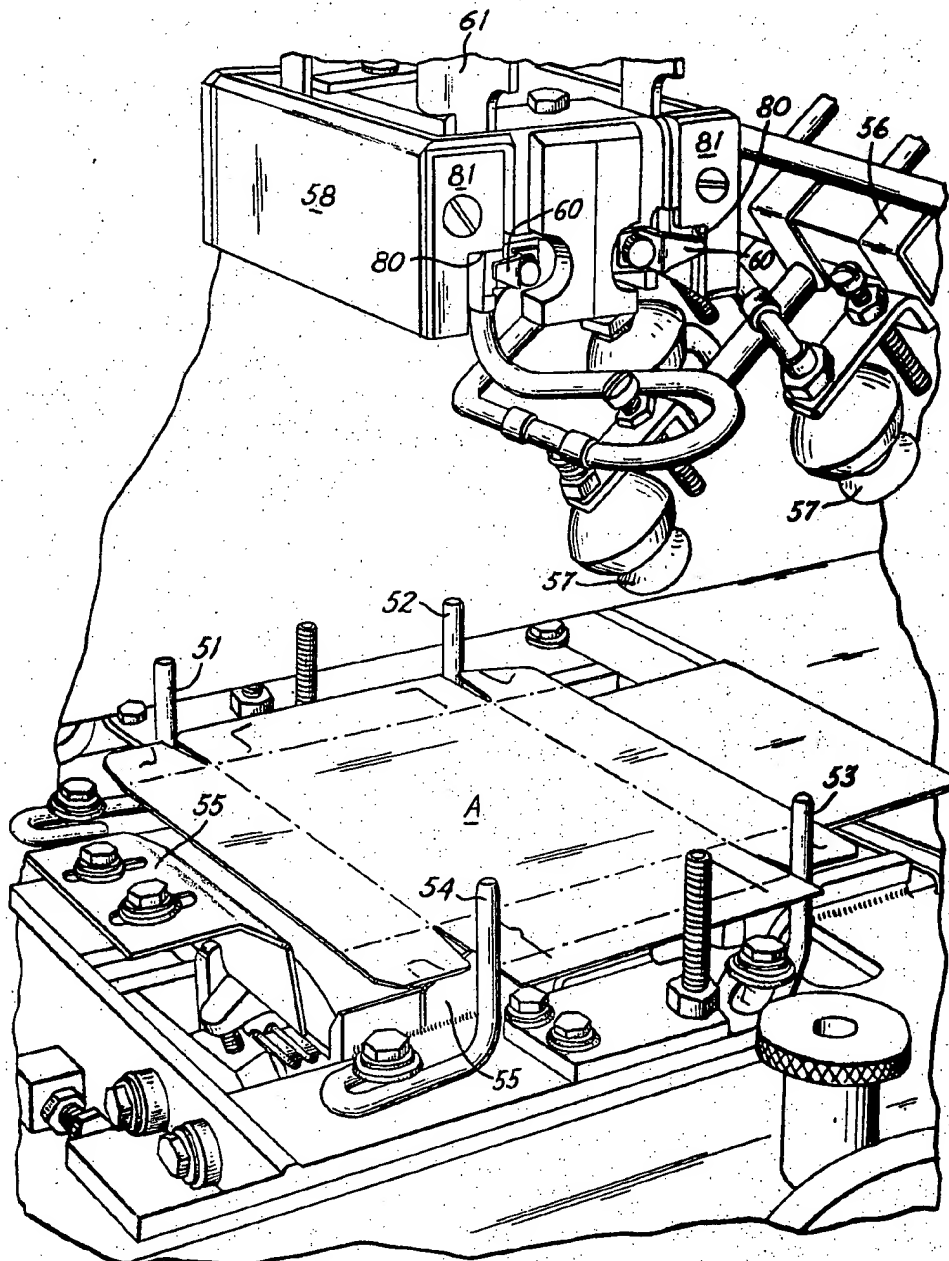


Fig. 2

INVENTOR.
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his ATTORNEY

Sept. 10, 1968

Filed Oct. 10, 1966

C. J. PIERCE, JR
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

10 Sheets-Sheet 3

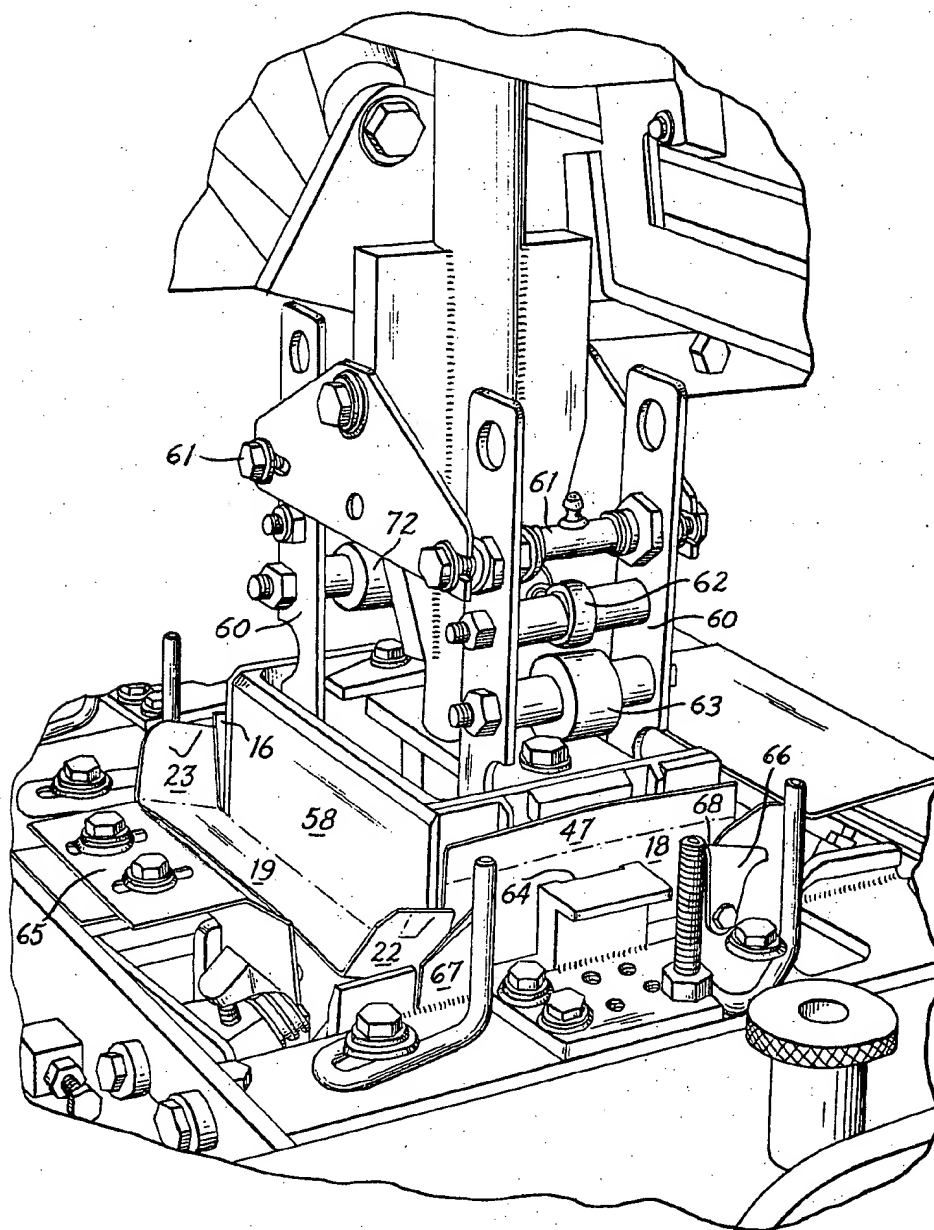


Fig. 3

INVENTOR.
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Sept. 10, 1968

Filed Oct. 10, 1966

C. J. PIERCE, JR.
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

10 Sheets-Sheet 4

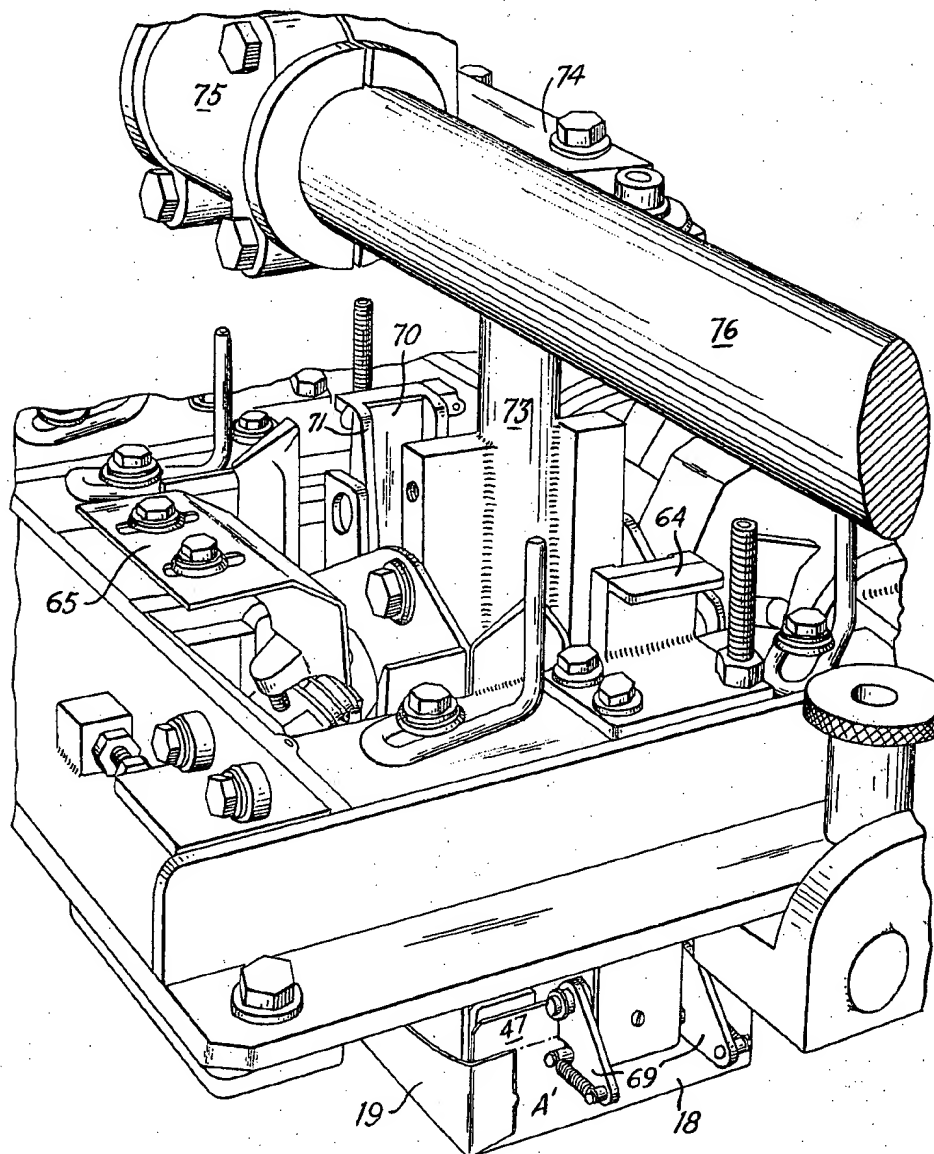


Fig. 4

INVENTOR.
Chester J. Pierce, Jr.
BY *Howard Russell*
his ATTORNEY

Sept. 10, 1968

GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

Filed Oct. 10, 1966

10 Sheets-Sheet 5

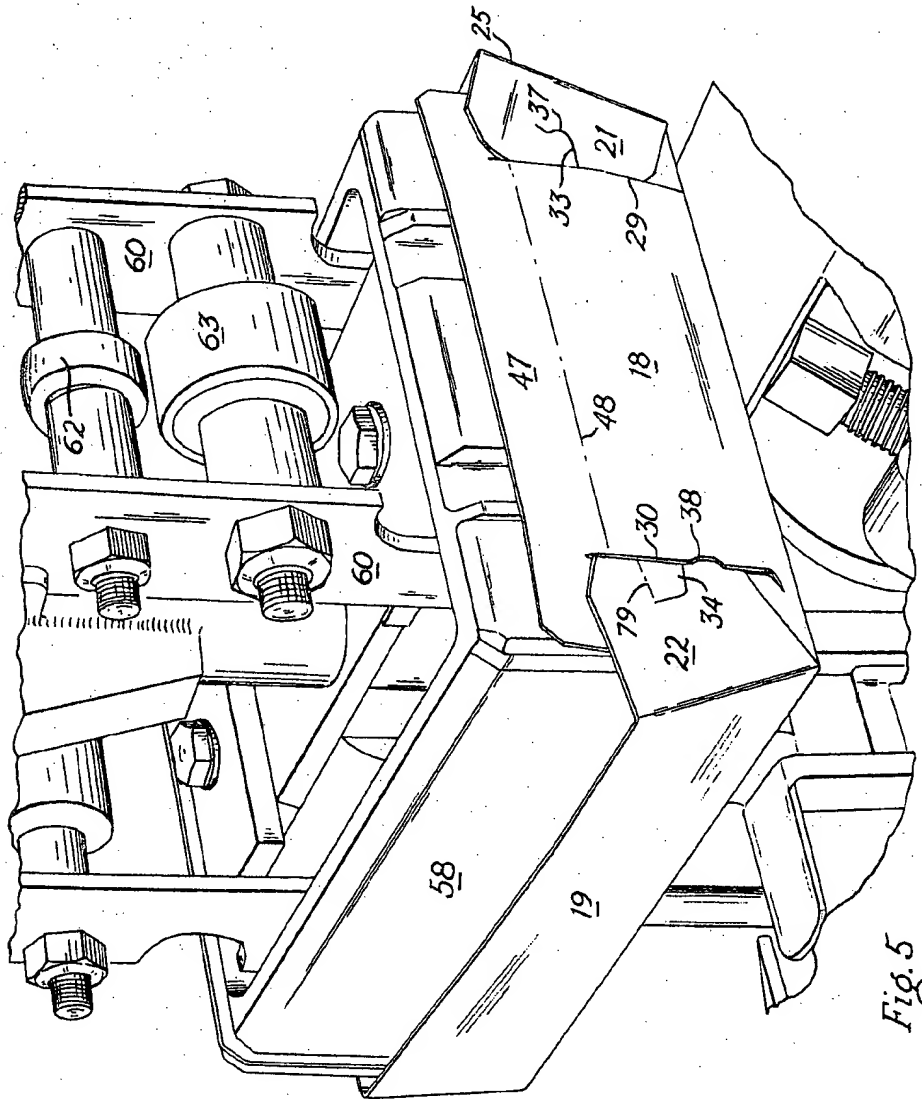


Fig. 5

INVENTOR.

Chester J. Pierce, Jr.

BY Howard Russell
his ATTORNEY

Sept. 10, 1968

Filed Oct. 10, 1966

66 C. J. PIERCE, JR
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

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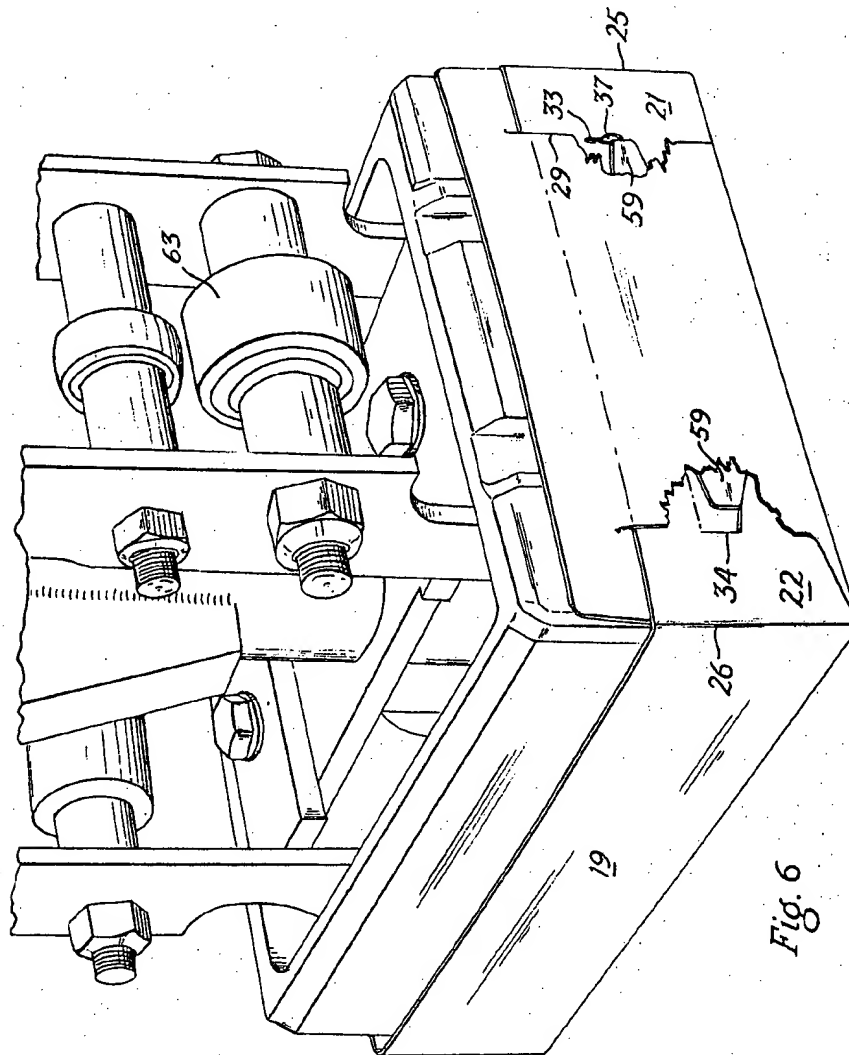


Fig. 6

INVENTOR.
Chester J. Pierce, Jr.
BY *Howard Russell*
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Sept. 10, 1968

C. J. PIERCE, JR.
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

Filed Oct. 10, 1966

10 Sheets-Sheet 7

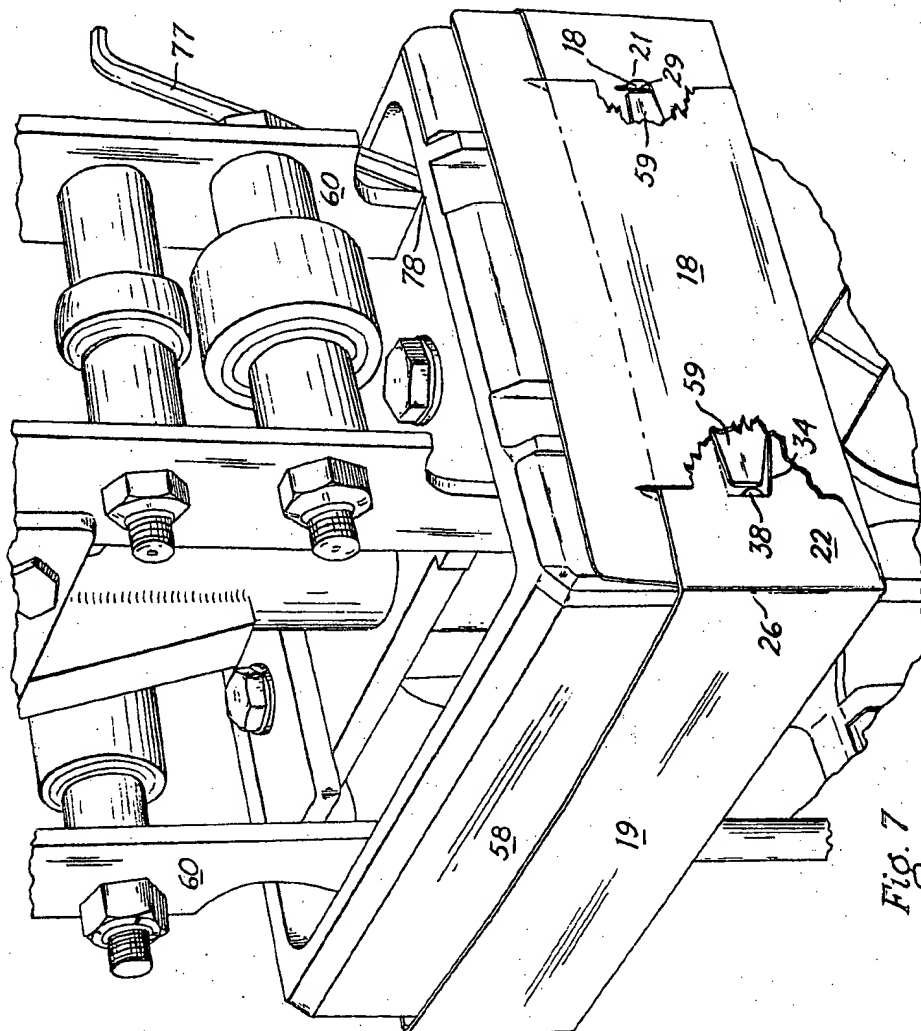


Fig. 7

INVENTOR.

Chester J. Pierce, Jr.

BY *Howard Russell*

his ATTORNEY

Sept. 10, 1968

C. J. PIERCE, JR.
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

Filed Oct. 10, 1966

10 Sheets-Sheet 8

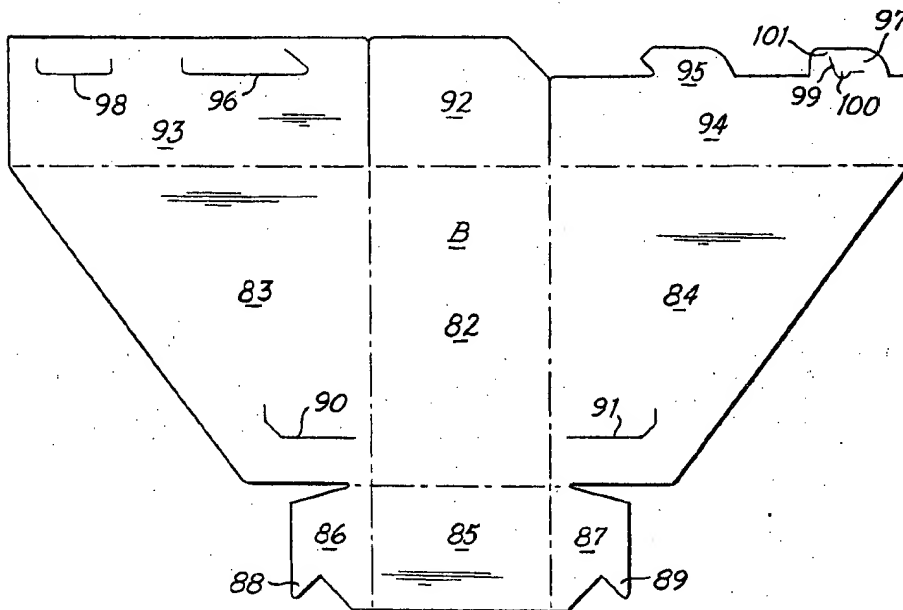


Fig. 9

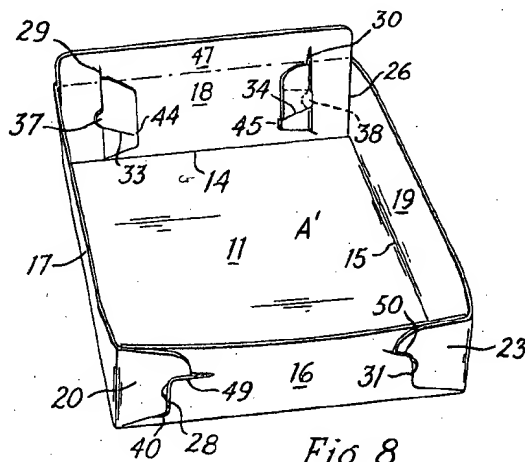


Fig. 8

INVENTOR.
Chester J. Pierce, Jr.

BY *Howard Russell*
his ATTORNEY

Filed Oct. 10, 1966

GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

10 Sheets-Sheet 9

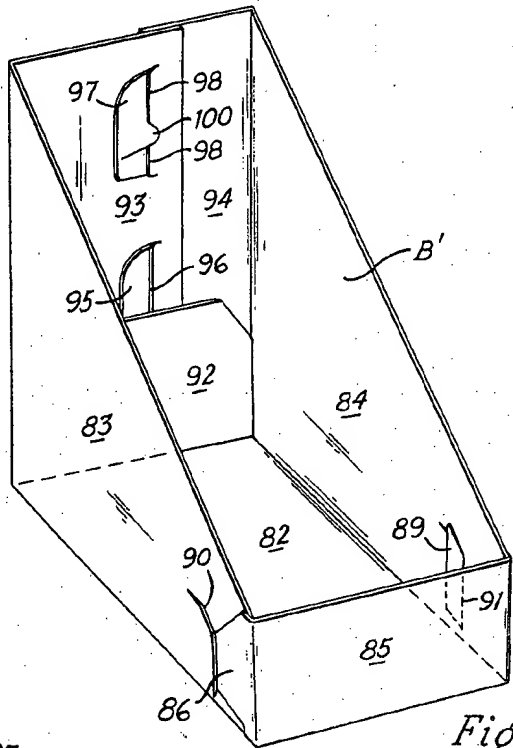


Fig. 10

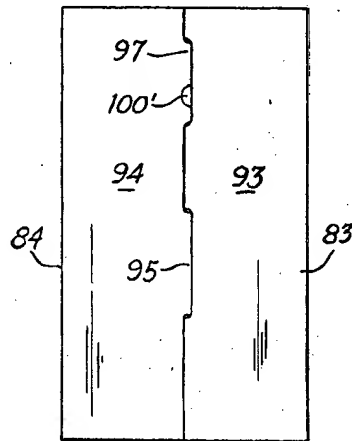


Fig. 11

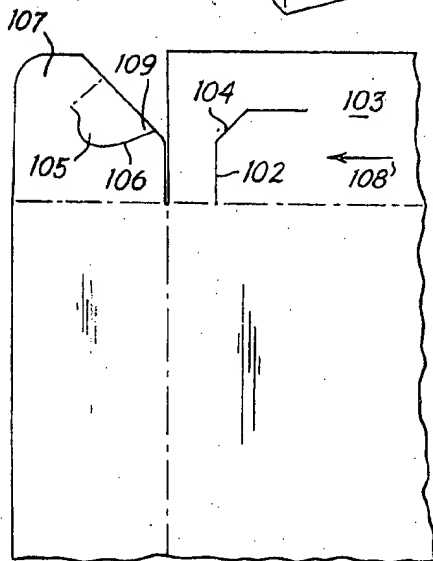


Fig. 12

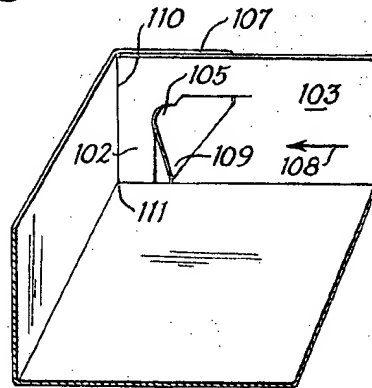


Fig. 13

INVENTOR:
Chester J. Pierce, Jr.
BY Howard Russell
his ATTORNEY

Sept. 10, 1968

C. J. PIERCE, JR
GLUELESS PANEL LOCKS, PARTICULARLY CORNER
LOCKS FOR FOLDING BOXES

3,400,877

Filed Oct. 10, 1966

10 Sheets-Sheet 10

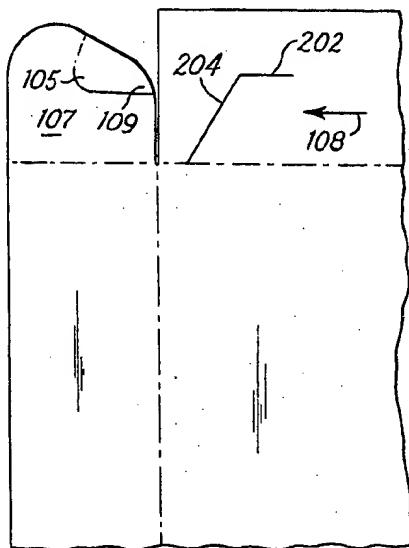


Fig. 14

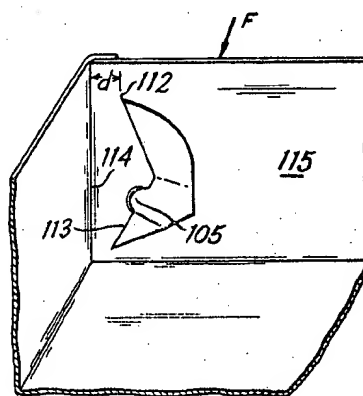


Fig. 16

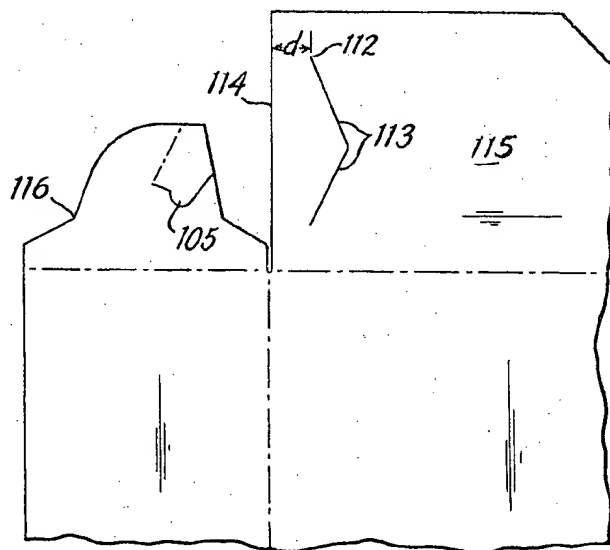


Fig. 15

INVENTOR.

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BY *Howard Stansell*

is ATTORNEY

1

3,400,877

GLUELESS PANEL LOCKS, PARTICULARLY CORNER LOCKS FOR FOLDING BOXES

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Filed Oct. 10, 1966, Ser. No. 585,435
23 Claims. (Cl. 229—32)

ABSTRACT OF THE DISCLOSURE

The present improvements provide a folding box panel interlock of the general type in which a tab is inserted into an insertion slot and in which an interlock results between the insertion slot and a coinciding portion of a slot in the tab. A pointed tip at the outer end portion of the tab slot is directed towards the box bottom panel. This precludes interference with the insertion of the tight fitting box contents or interference with the top edge of the box body in case the structure serves as a telescoping cover. A lug on the insertion slot or on the tab slot is snapped past an edge of the interlock and serves as a safety catch in this position. A bridge is optionally provided at the tab tip to prevent the tip from catching on an edge of the insertion slot. This bridge is severed after insertion of the tip.

The invention relates to improvements in glueless panel locks for folding boxes, blanks incorporating such improved corner locks, and in the method of interlocking the box or blank panels either within a wall area or at a box corner or corners.

The development of the practice of gluelessly interlocking box panels, rather than gluing them, accompanied by the origination of a great number of lock designs has led to increasingly stricter demands including the following:

The lock must be capable of being formed by automatic machinery.

The lock must be capable of being formed at high rates of speed of the order of at least one hundred boxes per minute.

The lock when formed should be tight, i.e., free from play or lost motion.

The lock must incorporate a safety-catch feature guarding against accidental disengagement.

The lock must be so shaped as not to catch on, or otherwise interfere with the insertion of, contents to be packaged.

The lock must be so shaped as to engage positively with a very low incidence of failure when handled on automatic machinery.

The requirement that the lock must not catch on box contents or interfere with their insertion has become acute in recent years as a result of the development of automatic high speed loading devices taking the place of hand loading in which it was possible to compensate by the operator's skill for physical characteristics of the lock.

Closely related to the requirement of non-interference with the box contents is the desirability that the lock should be usable for a box body as well as for a box cover telescopically fitting thereover without interference by edges, points, projections, etc. of the lock.

Fulfilling the above requirements, the improved lock provided by this invention is free from tips or points extending opposite to the direction of insertion of box contents.

This, however, involves another problem:

Tips or points extending in the direction of insertion,

2

in which direction they do not interfere with the contents, are likely to interfere with, or render difficult, the insertion of the lock flap through the slot in the side wall. The improved lock design overcomes this difficulty by an appropriate guard for the tip or point which precedes the latter during the insertion movement and may serve an additional function, as will become apparent from the following detailed description.

The various objects, features and advantages of this invention will appear more fully from the detailed description which follows accompanied by drawings showing, for the purpose of illustration, preferred embodiments of the invention. The invention also resides in certain new and original features of construction and combination of elements hereinafter set forth and claimed.

Although the characteristic features of this invention which are believed to be novel will be particularly pointed out in the claims appended hereto, the invention itself, its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part of it in which:

FIG. 1 is a plan view of a representative form of box blank incorporating different forms of corner locks;

FIGS. 2, 3 and 4 illustrate, in perspective views, three sequential phases of the box forming operation performed on the blank by a plunger and die mechanism;

FIGS. 5, 6 and 7 illustrate, in perspective views, and on an enlarged scale, three further phases of the box forming operation lying between the phases shown in FIGS. 3 and 4;

FIG. 8 is a perspective view of the formed box;

FIG. 9 is a plan view of a blank incorporating a typical panel lock;

FIG. 10 is a perspective view of the box set up from the blank of FIG. 9;

FIG. 11 is an elevational view of the back of the box of FIG. 10;

FIGS. 12 and 14 are plan views of modified corner portions of blanks;

FIG. 13 is a perspective view of the box corner portion resulting from the blank of FIG. 12;

FIG. 15 is a plan view of a modified corner portion of a blank; and

FIG. 16 is a perspective view of a corner portion of a box resulting from blank 15.

In the following description and in the claims various details will be identified by specific names for convenience. The names, however, are intended to be generic in their application. Corresponding reference characters refer to corresponding parts in the several figures of the drawings.

The drawings accompanying and forming part of this specification disclose certain specific details of construction for the purpose of explanation of broader aspects of the invention, but it should be understood that structural details may be modified in various respects without departure from the principles of the invention and that the invention may be incorporated in other structural forms than shown.

The blank A shown in FIG. 1 may be cut and creased from sheets or rolls of paperboard, box board or other foldable sheet material on conventional cutting and creasing machines.

The blank A comprises a central main panel 11 which could become a box bottom panel, in the event the blank is made into a box body, or a box top panel in the event the blank is made into a box cover. In this specification the blank will be described as being formed into a box body, and for reasons of convenience the panel 11 will

sometimes be referred to as a bottom panel. It is to be understood that the term bottom panel is not intended to be used in a limiting sense as the box body, if inverted, can serve as a telescoping box cover.

The blank A was specifically designed for experimental purposes. One of its ends comprises a dust flap, which is absent from the other, and the specific lock configurations differ. This design made it possible to erect and lock four differently designed corners at once. In the actual production of boxes incorporating the invention only one form of lock will generally be used.

The main panel 11 is bordered by fold lines 12, 13, 14 and 15 along which side wall panels 16, 17, 18 and 19 are articulated.

Pairs of adjacent side walls are interconnectible by means of flaps articulated to the end of one wall along a corner fold line and insertable into a slot in the other side wall.

Thus, flaps 20, 21, 22 and 23 are articulated to panels 17 and 19, respectively, along corner fold lines 24, 25, 26 and 27.

The corresponding insertion slots are in the panels 16 and 18 and are numbered 28, 29, 30 and 31.

There is a further slot 32, 33, 34 and 35 in each of the flaps, the flap slot being so laid out that the insertion slot and the flap slot have at least a point of coincidence within the body of the flap when the flap is fully inserted into the insertion slot to an end position in which the lock is completed after forming of the corner.

The course of one slot otherwise differs from the course of the other slot so as to form a locking lug seen at 36, 37, 38 and 39. It is readily seen that the locking lug proper may be formed on the flap, such as at 36, 37 and 39, but that it may also be formed in the side wall by appropriate configuration of the insertion slot, as seen at 38.

The locking lug is so disposed that the insertion slot in the wall continues, beyond the lug, towards the main or bottom panel.

In the illustrated example the insertion slots 28, 29, 30 and 31 are directed substantially perpendicular to the main panel, when the box is erected, except for the terminal portions of the slots which may optionally be angled off, as shown at 40, 41 and 42. As will later be seen from FIG. 14, the last described slot portion may also be slanted with respect to the main panel.

Considering now the course of the flap slot beyond the location of the respective locking lug, the flap slot continues towards an outer edge of the flap in a general direction towards the main panel, considering the aforementioned end position in which the lock is complete, but the flap slot diverges increasingly from the course of the insertion slot for increasing distances from the lug.

This can be visualized from an inspection of FIG. 1 alone, but is more conveniently seen from a comparison of FIG. 1 with FIG. 8 showing the respective end positions.

Advantages are obtainable by termination of the flap slots short of the respective outer edge, thus leaving a narrow weak bridge in the blank between the two flap portions adjacent the flap edge towards which the flap slot is directed. Such bridges are seen at 43, 44, 45 and 46.

As will be seen later, the unbroken bridges facilitate insertion of the flaps into the insertion slots and are ruptured after insertion by an operation by which the locking lug is snapped from a position overlying one surface, past the edge of the other slot, into a position overlying the opposite surface of the wall panel or flap, as the case may be.

The wall panel 18 of the blank A is fitted with a dust flap 47 articulated to the wall panel 18 along a dust flap fold line 48. The insertion slots 29 and 30 are extended to terminate with their upper ends in the dust flap. This permits the corner flaps 21, 22 to be of such large size

that portions of the flaps swing beyond the top boundary of the panel 18 when being inserted into the slots 29 and 30 (see FIG. 5).

In a wall not fitted with a dust flap, such as wall 16, additional clearance for the top portion of the corner flap is obtainable by angularly disposed portions 49, 50 of the insertion slots, which portions 49 and 50 are directed away from the respective corner.

Turning next to automatically operable devices and steps in the method of setting up and interlocking the blank, the blank A is shown deposited between four locating pins 51, 52, 53 and 54 of a forming die 55 by a blank feeder 56 comprising vacuum cups 57. At the illustrated instant the feeder is retreating to the upper right of the figure and a plunger 58 is descending to seat on the main panel of the blank.

The plunger comprises projectible and retractable hook elements 59 at the lower ends of blades 60 which are pivotally mounted at 61 on the plunger assembly (see also FIG. 3).

The hook elements 59 are normally in a projected position due to outwardly directed spring force applied at points 62 and may be retracted by rollers 63 entering between central cam elements 64 as the plunger descends further.

In the position shown in FIG. 3 the plunger has depressed the main panel of the blank below the top surface of the cam elements on which the blank rested originally (FIG. 2). This causes the end portions 18 and 16 to be folded into nearly upright position.

The blank further encountered lateral folding elements, one of which is seen at 65, which fold the walls 19 and 17 towards an upright position. During this operation the corner flaps strike flap folding cams visible at 66 and 67 which cause the flaps to fold at their respective corner fold lines and move towards a position substantially parallel to the panels 16 and 18.

Shortly after the position shown in FIG. 3, the central cam elements press the panels 16 and 18 firmly against the ends of the plungers. Likewise, the vertical edges of the flap folding cams 66 and 67 press the panels 16 and 18 against the plunger ends, one of these edges being visible at 68. At the same time the hook elements 59 of the plunger, which at this moment are still fully extended, bulge the panels 16 and 18 outwardly and cause the insertion slots to open, into which the corner flaps then enter, as the panels 17 and 19 are being erected.

The fully erected box with its corners locked is seen underneath the die in FIG. 4 at a moment shortly before the plunger reaches its lowest position at which spring-urged strip off latches 69 engage upper box edges and hold the finished box while the plunger is being withdrawn upwardly.

FIG. 4 shows also the face 70 of the track on the far central cam element 71 which is engaged by the far roller 72 (FIG. 3) which retracts hook elements of the plunger. There is further shown in FIG. 4 the upper end of the plunger stem 73 attached at 74 to an angle fitting 75 on a vertically reciprocating plunger drive bar 76.

Between the operations of FIGS. 3 and 4 there lie a series of further operations which could not conveniently be recorded in photographs on which the drawings are based, because these further operations take place inside the die.

FIGS. 5, 6 and 7 illustrate these operations and show the partially folded blank on the plunger, but without the die, and on an enlarged scale to show the engagement of the locking elements more clearly.

In the position shown in FIG. 5 the flaps 21 and 22 entered the insertion slots 29 and 30. The panel 18 is fully upright, but the panel 19 has not yet reached its vertical position. The hook elements 59 of the plunger bulge out the panel 18 about midway of the ends of the insertion slots, and the entering edges of flaps slip under the blade-shaped hooks 59 which are not visible in FIG. 5, but

which can be seen in FIG. 6 in which portions of the blank overlying the hooks were torn out in order to show this detail.

In the position shown in FIG. 6 the panel 19 is fully erected and the flaps 21 and 22 have reached their end position except for the snapping into place of the lugs which then become safety catches of the lock.

In FIG. 6 the portions of the flaps defined by the flap slots 33 and 34 still lie in the plane of the remainder of the flaps and the hook elements 59 are fully extended. This condition exists at the point where the plunger has entered the die, but its hook-element-retracting rollers 63 have not yet made contact with the cam elements 64 (FIGS. 3 and 4).

In FIG. 7 the hook elements are shown retracted. In order to show this condition without the die an Allen wrench 77 was wedged between the blade 60 and the wall of the hollow plunger 58 at 78.

Retraction of the hooks 59 caused the lug 37, which in FIG. 6 overlies the panel 18, to be snapped past the edge of the insertion slot 29 into a position underlying the panel 18, thus completing the lock. The result is shown in the upper left corner of FIG. 8 in which the box A' is shown in a position in which its ends are reversed.

Considering next the left box corner of FIG. 7, the flap portion defined by the flap slot 34 is drawn to the inside of the box and past the locking lug 38 on the panel 18 which can be seen just to the left of the left hook blade 59.

The engaged lock is seen in FIG. 8 in the upper right corner of the box. The locking lug 38 is not visible, as it is formed by the insertion slot 30, and a straight edged portion of the flap 22 is snapped past it and lies innermost of the box.

Referring to the left front corner of the box shown in FIG. 8, the arcuate configuration is the portion of the flap 20 from which the lug was cut, the lug proper lying on the inside of the box. Similarly the lug of the flap 23 is out of view. However, the corresponding lug 37 of the lock of the upper left box corner is plainly visible on the inside of the box. Its disposition corresponds to the location of lugs on the inside of the wall 16 nearest the observer.

When a locking lug is being snapped past the edge of the respective other slot, the weak bridge 43, 44, 45 and 46, respectively, at the end of the flap slot is ruptured due to the greater degree of flexing of the portion of the flap which directly underlies the hook 59 in relation to the lesser degree of flexing of the remainder of the flap.

It is seen from FIG. 8 that the flap slot increasingly diverges from the insertion slot for increasing distances from the locking lug in a direction towards the flap edge or bridge portion.

Further, it is apparent that if two points are selected of equal height above the main panel, one point on the insertion slot and the other on the flap slot, the points of the flap slot have a greater distance from the corner fold line than the points of the insertion slot in the wall.

Returning briefly to FIGS. 3 and 5 illustrating the insertion of the corner flaps, it is readily seen that the lower corner portion of each flap enters the insertion slot first. The existence of a bridge portion, which is later ruptured, insures that the remainder of the flap follows its lower corner portion without danger of the flap portion, which is later grasped and flexed by the hooks 59 of the plunger, catching on the edge of the insertion slot, in which case the upper edge portion of the flap might pass to the outside of the wall panel 18 rather than enter the slot.

While the strength and reliability of the lock is not affected by the presence or absence of a rupturable bridge, the incidence of failures of assembly is reduced, particularly in machines operating at high speeds of the order of over 100 boxes per minute.

The slots may be shaped to provide for a substantial lineal coincidence of the two interlocking cut edges formed by the wall slot and the flap slot. In FIG. 1 the straight portion of the flap slot 33 above the lug 37 is designed to engage the wall slot 29 along a line, rather than a point, of coincidence, thus distributing any load exerted on the lock over a substantial length of edges.

The length of the flap slots 34 may similarly be chosen great enough to engage the wall slot 30 in a line-to-line form of engagement.

The flap 22 is provided with a crease 79 in order to predetermine the creasing of the board under the pull of the plunger hook elements 59. This crease line lines up with edge 80 of a back-up plate 81 on the plunger (FIG. 2).

FIG. 9 illustrates the application of the invention to a panel lock, as distinguished from a corner lock.

The blank B comprises a bottom panel 82 to which side panels 83 and 84 are articulated. A front panel 85 is articulated to the bottom panel and has two corner flaps 86, 87 hinged to it which comprise hook portions 88 and 89 for interengagement with appropriately shaped side wall slots 90 and 91.

An inner end panel 92 is articulated to the bottom panel 82 and outer end panels 93 and 94 are articulated to the side panels 83 and 84. The panel 94 comprises a hook 95 adapted to engage a slot 96 in the panel 93. As this hook engagement is not sufficiently reliable to prevent accidental withdrawal of the hook from its slot, a further lock is provided comprising a tab 97 and an insertion slot 98.

The panel 94 and tab 97 are comparable to any of the above discussed flaps provided with a flap slot 99 contoured to define a lug 100 and, optionally, a bridge portion at 101.

FIGS. 10 and 11 show the box B' set up from the blank B of FIG. 9. The outer end panels 93 and 94 lie in substantially the same plane and form the rear wall of the box. The lug 100 lies on the inside and the arcuate cut 100' visible from the back of the box (FIG. 11) indicates its location.

FIG. 12 shows the corner portion of a blank in which the insertion slot 102 in the wall 103 comprises a slanted portion 104 with which the lug 105 defined by the flap slot 106 in flap 107 interlocks. The merit of this arrangement is apparent from FIG. 13 showing the set up box corner.

The box is designed to be loaded in the direction of the arrow 108 with contents likely to catch on any projecting portion of the corner lock. It is seen that the lock construction does not interfere with the loading as the tip 109 of the locking element of the flap points toward the corner fold line 110 or corner point 111.

FIG. 14 shows a modification of the blank of FIG. 12 in which the slanted portion 204 of the insertion slot 202 extends to the bottom panel in order to eliminate any tendency of the vertical portion of the insertion slot 102 of FIG. 13 to catch on contents. Non-modified elements of FIG. 14 are identified by the same reference numerals as were applied to FIG. 12.

In the blank portion shown in FIG. 15 the upper end 112 of the angled wall slot 113 is removed from the edge 114 of the wall 115 by only a short distance "d." This arrangement provides increased resistance to pressure exerted from the outside on the wall 115 towards the inside of the box. The locking lug 105 engages the lower portion of the insertion slot, whereas the point 116 wedges into the upper end 112 of the slot and stabilizes the wall panel 115. The resulting box corner is shown in FIG. 16 in which the force is indicated by the arrow F.

It is evident that still further modifications of the lock may be made to meet other specific requirements.

What is claimed is:

1. A carton of foldable board having side walls hinged ly connected to a main panel, at least one pair of adjacent

corner forming side walls being interconnected by means of a flap articulated to the end of one side wall along a corner fold line and inserted into an insertion slot in the other side wall to an inserted end position, there being a further slot in the said flap extending from the interior of the body of the flap towards an edge of the flap, the insertion slot and the flap slot having at least a point of coincidence within the interior of the body of the flap from which point of coincidence the flap slot runs towards the edge of the flap in a direction toward said main panel, continuing from said point in the direction toward said main panel, one slot following a course deviating from the course of the other slot to form a locking lug which is to be snapped from a position overlying one surface past the edge of the other slot to a position overlying the opposite surface, the insertion slot continuing beyond the lug towards the main panel, and the flap slot continuing beyond the lug towards an outer edge of the flap in a general direction towards the main panel, considering wall and flap in the end position, and diverging increasingly from the insertion slot for increasing distances from said lug.

2. A carton according to claim 1 in which both slots within the range of increasing divergence are substantially straight.

3. A carton according to claim 1 in which the points of the flap slot within the range of divergence of the slots are at a greater distance from the corner fold line than comparable points of the wall slot, comparing points having the same height above the main panel, considering the main panel in the position of a carton bottom panel.

4. A carton of foldable material having side walls hingedly connected to a bottom panel, at least one pair of adjacent side walls being interconnected by means of a flap articulated to the end of one side wall and inserted into an insertion slot in the other side wall to an inserted end position, there being a slot in said flap comprising a first portion registering with said insertion slot, a second portion extending from said first portion, said second portion deviating from the insertion slot to form on said flap a locking lug which is to be snapped from an overlying position through said insertion slot into an underlying, positive locking, position, said lug extending in opposite direction relative to the insertion direction of said flap, and a third portion extending from said second portion through the body of said flap to an outer edge thereof in a direction towards said bottom panel in inserted position and diverging increasingly from said insertion slot as the distance from said lug increases in the direction towards the bottom panel.

5. A carton according to claim 4 in which the third slot portion is formed by an incomplete cut such as to leave adjacent said outer edge a narrow rupturable bridge between flap areas on either side of the said third slot portion.

6. A carton of foldable material having side walls hingedly connected to a bottom panel, at least one pair of adjacent side walls being interconnected by means of a flap articulated to the end of one side wall and inserted into an insertion slot in the other side wall to an inserted end position, there being a slot in said flap comprising a locking portion coinciding with a portion of the insertion slot, between said locking portion and the outer edge of the flap towards which the flap slot runs in a direction towards said bottom panel, there being a locking lug formed on said flap by said flap slot which lug is to be snapped from an overlying position through said insertion slot into an underlying, positive locking, position, said lug extending in opposite direction relative to the insertion direction of said flap, said flap slot comprising an outer slot portion extending between said lug forming portion (through the body of said flap to) and an outer edge of said flap in a direction towards the bottom panel, considering the flap in inserted position in said wall, said outer slot portion di-

verging increasingly from said insertion slot for increasing distances from said lug.

7. A carton according to claim 6 in which the outer slot portion is formed by an incomplete cut such as to leave adjacent said outer edge a narrow rupturable bridge between the flap areas on either side of the outer slot portion.

8. A carton according to claim 6 in which the points of the flap slot within the range of increasing divergence of the slots are at a greater distance from the corner fold line than comparable points of the insertion slot, comparing points having the same height above the bottom panel.

9. A carton of foldable material having side walls hingedly connected to a bottom panel, at least one pair of adjacent side walls being interconnected by means of a flap articulated to the end of one side wall along a corner fold line and inserted into an insertion slot in the other side wall to an inserted end position, there being a slot in said flap, said insertion slot comprising a point of coincidence with said flap slot and comprising between said point and said bottom panel a locking lug past which an edge of the flap slot is to be snapped from an overlying position into an underlying, positive locking, position, said lug extending in the direction of insertion of the flap, the portion of the flap slot which extends from the portion which is to be snapped past said lug towards an outer edge of the flap being directed towards the bottom panel considering the lug in inserted position, the flap slot diverging increasingly from the insertion slot for increasing distances from said lug and decreasing distances from the bottom panel.

10. A carton according to claim 9 in which the terminal slot portion is formed by an incomplete cut such as to leave adjacent the outer flap edge a narrow rupturable bridge of weakness between the flap areas on either side of the terminal slot portion.

11. A carton according to claim 9 in which the points of the flap slot with the range of increasing divergence of the slots are at a greater distance from the corner fold line than comparable points of the insertion slot, comparing points having the same height above the bottom panel.

12. A carton of foldable board having side walls hingedly connected to a bottom panel, at least one pair of adjacent corner forming side walls being interconnected by means of a flap articulated to the end of one side wall along a corner fold line and inserted into an insertion slot in the other side wall to an inserted end position, there being a further slot in said flap, the insertion slot and the flap slot having at least a point of coincidence within the body of the flap, considering said end position, continuing from said point, one slot following a course deviating from the course of the other slot to form a locking lug which is to be snapped from a position overlying one surface past the edge of the other slot to a position overlying the opposite surface, the insertion slot continuing beyond the lug toward the bottom panel and the flap slot continuing beyond the lug, within the body of the flap, towards an outer edge of the flap in a general direction toward the bottom panel, considering said end position, said flap slot incompletely severing at the outer edge of the flap the two flap portions to either side of the flap slot to leave a severable bridge between the two portions which maintains the two portions connected during insertion into the insertion slot.

13. A carton according to claim 12 in which both slots within the range of increasing divergence are substantially straight.

14. A carton according to claim 12 in which the points of the flap slot within the range of divergence of the slots are at a greater distance from the corner fold line than comparable points of the wall slot, comparing points having the same height above the bottom panel.

15. In a carton blank of paperboard comprising a main panel, wall panels articulated to the main panel along

main fold lines, a corner lock flap articulated to one of a pair of adjacent corner forming wall panels along a corner fold line, the other of the pair of wall panels having an insertion slot in it for insertion of at least a portion of the corner flap in corner forming position, the corner flap having a flap slot in it for interengagement with said insertion slot in corner forming position, the improvement which is characterized by the flap slot being formed as an internal slot, one end of which lies within the body of the flap at a greater distance from the flap edge than the other end of the slot, which other end lies at a distance from the flap edge sufficiently short to form a severable bridge of weakness between the two flap portions on either side of said other end of the flap slot.

16. A carton blank according to claim 15 in which the flap bridge is formed by an unslotted portion of the paperboard, the thickness of the bridge being substantially equal to the thickness of the board.

17. A carton blank according to claim 15 in which the flap bridge is formed by a cut extending partially, but not entirely, through the board.

18. A carton blank according to claim 15 in which the bridged flap slot is substantially tangentially disposed with respect to an imaginary circle about the corner point and in which the bridge is within that portion of the flap slot which first passes through the insertion slot, the corner point being the point at which said main fold lines and said corner fold line meet.

19. A carton blank of paperboard comprising a main panel, a pair of adjacent wall panels articulated to the main panel along main fold lines meeting at a corner point; a corner lock flap articulated to the end of one of said wall panels along a corner fold line aimed at said corner point, the other of the pair of wall panels having an insertion slot in it for insertion of at least a portion of the corner flap in corner forming position, there being a flap slot in said flap, the insertion slot being so disposed in relation to the flap slot that in corner forming position in which the flap is inserted to an end position the two slots have at least a point of coincidence which point lies within the body of the flap, one slot following, continuing from said point of coincidence, a course deviating from the other slot to form a locking lug which is to be snapped from a position overlying one surface past the edge of the other slot to a position overlying the opposite surface, the insertion slot continuing beyond the lug towards the main panel, and the flap slot continuing beyond the lug towards an outer edge of the flap substantially in a tangential direction with respect to an imaginary circle about the corner point, the flap slot terminating short of the outer edge of the flap, there remaining

a connecting bridge of weakness between the two flap portions on either side of the flap slot.

20. A carton of foldable board, the carton comprising a bottom panel and sides which are upright with respect to the bottom panel, at least one of the sides comprising two panel portions which overlap and are interlocked by a tab on one of the panel portions, said tab extending into an insertion slot in the other panel portion, there being a further slot in said tab extending from the interior of the body of the tab towards an edge of the tab, the insertion slot and the tab slot having at least a point of coincidence within the interior of the body of the tab from which point of coincidence the tab slot runs towards the edge of the tab in a direction towards the bottom panel, continuing from said point in the direction toward the main panel, one slot following a course deviating from the course of the other slot to form a locking lug which is to be snapped from a position overlying one surface past the edge of the other slot into a position overlying the opposite surface, the insertion slot continuing beyond the lug towards the bottom panel, and the tab slot continuing beyond the lug towards an outer edge of the tab in a general direction towards the bottom panel, considering said tab and said other panel portion in the end position in which said panel portions are interlocked, said tab slot diverging increasingly from the insertion slot for increasing distances from said lug.

21. A carton according to claim 20 in which the locking lug is formed on said tab and points in a direction opposite to the direction of insertion of the tab into the insertion slot.

22. A carton according to claim 20 in which the locking lug is formed on said other panel portion by said insertion slot and points in the direction of insertion of said tab into the insertion slot.

23. A carton according to claim 20 in which the tab slot terminates short of the outer edge of the tab toward which it extends, leaving a severable bridge between the board portions on either side of the tab slot.

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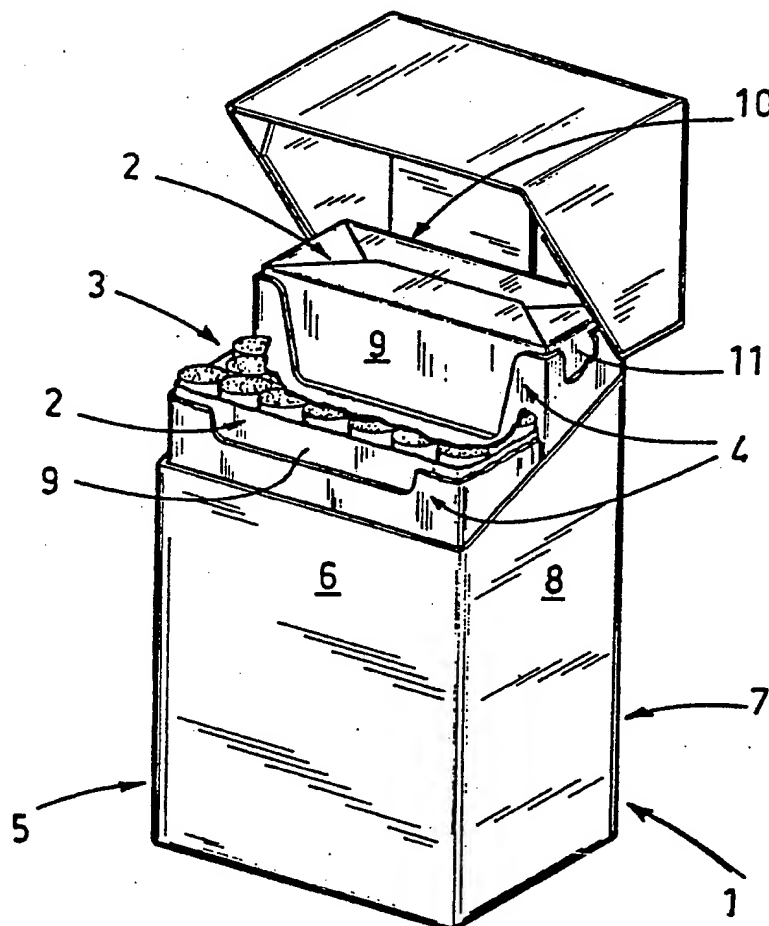
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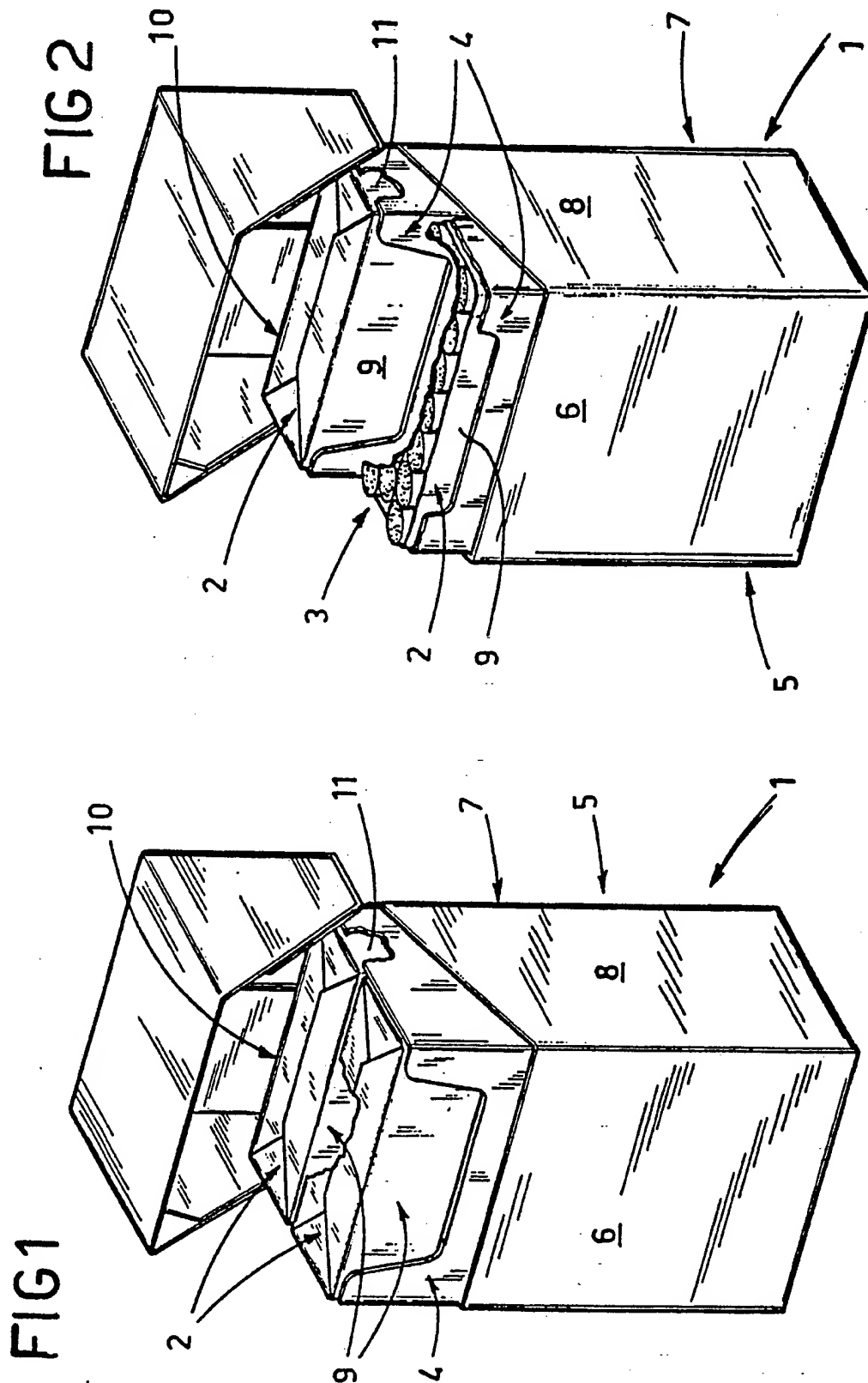
United States Patent [19][11] **Patent Number:** **5,277,304****Brizzi et al.**[45] **Date of Patent:** **Jan. 11, 1994**[54] **PACKET OF CIGARETTES**[75] **Inventors:** Marco Brizzi, Zola Predosa; Eros Stivani; Antonio Gamberini, both of Bologna, all of Italy[73] **Assignee:** G.D. Societa Per Azioni, Bologna, Italy[21] **Appl. No.:** 962,729[22] **Filed:** Oct. 19, 1992[30] **Foreign Application Priority Data**

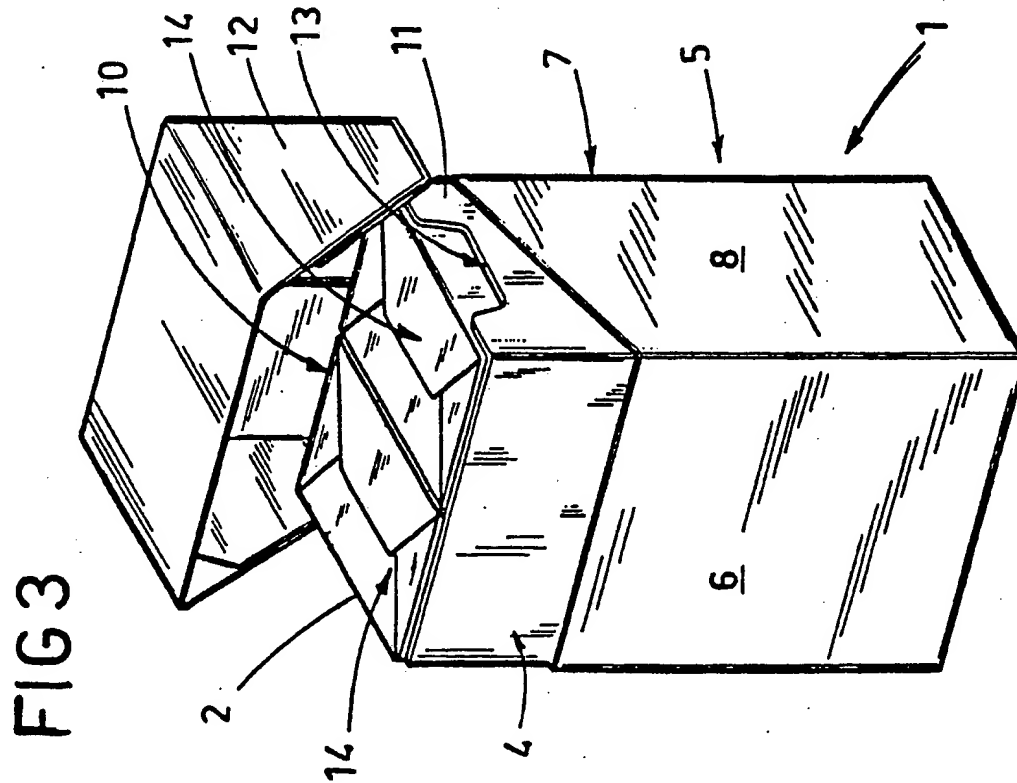
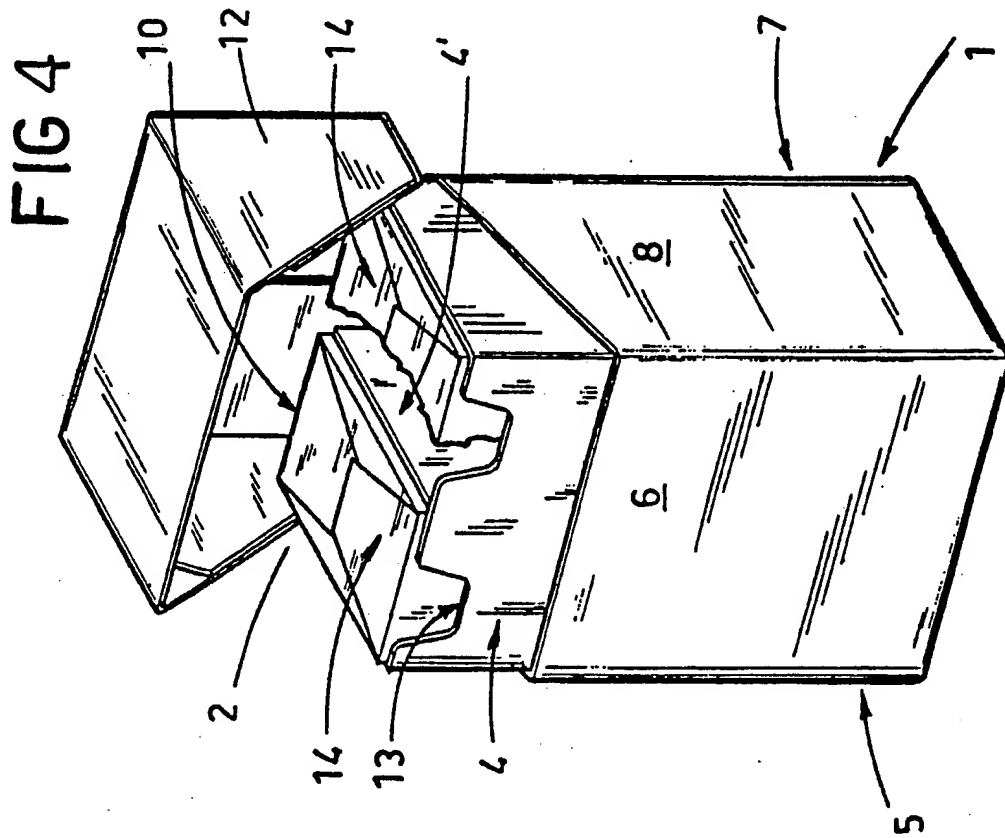
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[51] **Int. Cl.⁵** B65D 85/10[52] **U.S. Cl.** 206/256; 206/268[58] **Field of Search** 206/256, 268, 271, 257, 206/261[56] **References Cited****U.S. PATENT DOCUMENTS**3,039,671 6/1962 Chiamardas 206/268 X
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5,143,213 9/1992 Moore et al. 206/268*Primary Examiner*—William I. Price*Attorney, Agent, or Firm*—Cushman, Darby & Cushman[57] **ABSTRACT**

In a cigarette packet appearing essentially as a parallelepiped body capable of accommodating at least two groups of cigarettes enveloped in respective wrappers surrounded by at least one internal collar, the body and wrappers each exhibit a front face, a rear face and two flank faces; the individually wrapped groups of cigarettes are positioned one adjacent to the other with the relative wrappers in mutual contact by way of the broader front and rear faces rather than by way of the flanks.

12 Claims, 2 Drawing Sheets





PACKET OF CIGARETTES

BACKGROUND OF THE INVENTION

The present invention relates to a packet of cigarettes.

The invention relates in particular to a rigid type of cigarette packet with a flip-top hinged lid, but is also applicable to the soft, crush type packets. Cigarette packets currently in use include a type embodied in such a way as to accommodate two distinct internal wrappers, each enveloping a respective group of cigarettes, disposed one beside the other and in mutual contact along two flanks, that is, offering one of two narrower faces one to another. The packets in question exhibit a flat, elongated configuration, and more exactly, a relatively small lesser dimension or depth (generally corresponding to the depth of a double layer of cigarettes), and a relatively large greater dimension, or breadth. Clearly, when filled with an appreciable number of cigarettes, i.e. a number greater than 20 or 25, the breadth dimension of packets embodied in this way tends to take on proportions, commensurate with the depth of the groups of cigarettes, that lead to difficulties in manufacture when using conventional packaging machines to and to problems with use.

The object of the present invention is to provide a packet of cigarettes unaffected by the drawbacks mentioned above.

SUMMARY OF THE INVENTION

The stated object is realized, according to the invention, in a packet of cigarettes consisting in a body containing at least two groups of cigarettes enveloped in respective wrappers and at least one collar anchored internally to the body, wherein the body and the wrappers each exhibit a front face, a rear face and two flanks. The individually wrapped groups of cigarettes are distinct one from another and disposed in mutual contact by way of respective front and rear faces exhibiting dimensions greater than those of the relative flank faces.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

FIG. 1 illustrates a first preferred embodiment of a large capacity packet of cigarettes according to the invention, viewed in perspective and in an open configuration;

FIG. 2 illustrates an alternative embodiment of the packet of FIG. 1, viewed in perspective with certain parts cut away to better reveal others;

FIG. 3 illustrates a third embodiment of the packet of FIG. 1, seen in perspective;

FIG. 4 illustrates an alternative embodiment of the packet of FIG. 2, seen in perspective.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A packet 1 of cigarettes according to the present invention is designed generally to contain a large number of cigarettes. Such a large number of cigarettes, naturally enough, may be taken to be a number greater than 20 or 25, the contents of an ordinary packet. Such a packet may be of the rigid box type with a hinged lid, or of the softer crush type, and consists in a body 5 containing at least two groups of cigarettes 3 enveloped

in respective wrappers 2, and a collar 4 anchored internally to the body 5. The body 5 presents a front face 6, a rear face 7 and two flanks 8. Likewise, each wrapper 2 presents a front face 9, a rear face 10 and two flanks 11.

The two separate wrappers 2 contained by the body 5 of the packet 1 are disposed in mutual contact by way of two corresponding faces, front 9 and rear 10 respectively, of which the transverse dimensions are greater than those of the flank face 11. As discernible from the accompanying drawings, the packet 1 appears parallelepiped in shape, with a substantially square base, and is thus easier to handle than the essentially flat packets currently in use.

The body 5 might be fitted internally with just one collar 4 encompassing both of the wrappers 2, as illustrated in FIGS. 1 and 3. In this instance, with one of the wrappers 2 emptied, the retention of the remaining cigarettes is entrusted entirely to the relative wrapper 2 which, however, may tend to give way for lack of support.

In the example of FIGS. 2 and 4, the body 5 is fitted with two distinct collars 4. One to each wrapper 2, more particularly, in FIG. 4 the two collars in question are created by the addition of a dividing element 4' to the normal single collar 4, of which the function is to separate the two wrappers 2.

The cigarettes are invested with greater stability in this latter embodiment, inasmuch as when either one wrapper 2 or the other is removed ultimately, once emptied, the remaining cigarettes are held in their correct position by the relative compartment of the collar 4, which is fixed permanently to the body 5.

The packet 1 disclosed is easily produced using manufacturing machines currently in use. By providing a wrapper 2 for each row or pair of rows of cigarettes, the stability of the cigarettes themselves can be significantly enhanced.

In the embodiments of FIGS. 2 and 4 in particular, the cigarettes are maintained constantly in their correct position and formation while still in the packet, with no risk of creasing and/or damage. Where the packet 1 is of a rigid type with a hinged flip-top lid, as illustrated in the accompanying drawings, the wrappers 2 can be accommodated in the body 5 with front and rear faces 9 and 10 disposed either parallel or perpendicular to the hinge axis of the lid 12, as shown respectively in FIGS. 1 and 2 and in FIGS. 3 and 4.

In the embodiment of FIG. 3, which affords a single collar 4 surrounding both wrappers 2, and in which the front and rear faces 9 and 10 in mutual contact are disposed perpendicular to the hinge axis of the lid 12, the collar 4 might incorporate a cutaway 13 coinciding with one of the flanks 8 of the body 5 and serving to facilitate removal of the topmost part of the wrapper 2. In FIG. 4, by contrast, the collar 4 affords two such cutaways 13 coinciding with the front face 6 of the body 5, one for each of the two wrappers 2. In this instance the flap 14 pulled by the consumer to remove of the top part of wrapper 2 is associated with the relative flank 11 rather than with the front face 9.

Embodiments relative to the crush type of packet, though not shown in the drawings, are similar to those already illustrated but without the lid 12.

What is claimed:

1. A packet of cigarettes comprising:

a hollow rigid body having a base, a lid, a front face, a rear face, and two outer flank faces;
 at least one collar fixed to said body; and
 at least two cigarette wrappers for containing res-
 pected groups of cigarettes, said wrappers being
 disposed within said body and each having (i) first
 and second inner flank faces, (ii) two broader faces
 of a greater dimension than said first and second
 inner flank faces, and (iii) an access portion through
 which said cigarettes can be accessed, each of said
 wrappers being arranged to have at least one of its
 two broader faces facing a respective broader face
 of another of said wrappers, said lid of said body
 being openable to permit access to said cigarettes
 through said access portion of said wrappers.

2. A packet of cigarettes as claimed in claim 1,
 wherein said cigarette wrappers are arranged such that
 said first inner flank faces and said second inner flank
 faces respectively lie in substantially the same plane,
 said first and second inner flank faces each having their
 respective added dimensions being substantially equal
 to the dimension of one of said broader faces.

3. A packet of cigarettes as claimed in claim 2,
 wherein said hollow body has a substantially square
 base.

4. A packet of cigarettes as claimed in claim 1,
 wherein said at least one collar surrounds said wrap-
 pers.

5. A packet of cigarettes as claimed in claim 2,
 wherein said at least one collar surrounds said wrap-
 pers.

6. A packet of cigarettes as claimed in claim 1,
 wherein said at least one of said two broader faces of
 each wrapper is in mutual contact with said respec-
 tively facing broader face of said another of said wrap-
 pers.

7. A packet of cigarettes comprising:

a parallelepiped rigid body having a substantially
 square base, four side faces, and a lid being con-
 nected to said body by a hinge;

at least two cigarette wrappers for containing respec-
 tive groups of cigarettes, said wrappers being dis-

posed within said body and each having two flank
 faces and two broader faces of a greater dimension
 than said flank faces, each of said wrappers being
 arranged to have at least one of its two broader
 faces facing a respective broader face of another of
 said wrappers; and

a collar fixed to said body, said collar surrounding
 said wrappers.

8. A packet of cigarettes as claimed in claim 7,
 wherein said wrappers are alternatively arrangeable
 within said rigid body between a configuration in which
 said broader faces of said wrappers extend in a direction
 parallel to an axis of said hinge and a configuration in
 which said broader faces of said wrappers extend in a
 direction perpendicular to said axis of said hinge.

9. A packet of cigarettes comprising:

a parallelepiped rigid body having a substantially
 square base, a front face, a rear face, and two outer
 flank faces;

at least two cigarette wrappers for containing respec-
 tive groups of cigarettes, said wrappers being dis-
 posed within said body and each having first and
 second inner flank faces and two broader faces of a
 greater dimension than said first and second inner
 flank faces, each of said wrappers having at least
 one of its two broader faces facing a respective
 broader face of another of said wrappers; and

at least two collars, each of which is fixed to said
 body and surrounds a respective one of said wrap-
 pers.

10. The packet of cigarettes as claimed in claim 9,
 further comprising a lid, said lid being connected said
 body by a hinge, said hinge having an axis about which
 said lid is moveable.

11. A packet of cigarettes as claimed in claim 10,
 wherein said broader faces extend in a direction parallel
 to said axis of said hinge.

12. A packet of cigarettes as claimed in claim 10,
 wherein said broader faces extend in a direction perpen-
 dicular to said axis of said hinge.

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